

**ABSTRACT OF THE DISCLOSURE**

During the formation of a metallization layer according to the “via first, trench last” sequence with a low-k dielectric layer, resist poisoning is significantly reduced in that a low-density oxide layer is formed on the low-k dielectric layer, for example by converting an upper portion thereof into an oxide so that prior to and during the formation of the cap layer, out-gassing of volatile materials is enhanced. Since the density of the cap layer is reduced compared to cap layers formed by conventional deposition techniques, out-gassing may still be maintained across the entire substrate surface during the via and trench formation so that a critical level of resist contamination may reliably be avoided.